CHAPTER ONE
PURPOSE AND NEED

1.1 INTRODUCTION

The Federal Aviation Administration (FAA) proposes to modify an existing departure procedure that was implemented as part of the Four Corner-Post Plan at McCarran International Airport (LAS), Las Vegas, Nevada, in October 2001. The Four Corner-Post Plan was developed and implemented to address growing airspace and air traffic control inefficiencies caused by increases in air traffic in the Las Vegas TRACON airspace.

This Supplemental Environmental Assessment (SEA) has been developed to assess the potential environmental impacts that may be associated with the proposed modification of the STAAV Area Navigation (RNAV) Standard Instrument Departure (SID) to accommodate eastbound departures from Runway 25.

An SEA requires analysis and documentation similar to that of an Environmental Impact Statement (EIS), but with somewhat less detail and less intensive coordination than is required with an EIS. Depending upon whether certain environmental thresholds of significance are exceeded, an SEA will either lead to a Finding of No Significant Impact (FONSI) or to the subsequent preparation of an EIS.

This Draft SEA is made available for review and comment as part of the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C., § 432 et seq.). After review and preparation of responses to the public comments a Final SEA will be produced. The federal decision-makers will use the Final SEA in their determination to approve or disapprove the Proposed Action.

The format and content of the SEA conforms to the regulations of the President's Council on Environmental Quality (CEQ) implementing the procedural provisions of NEPA (title 40, CFR 1500-1508). The document also conforms to the environmental orders of the US Department of Transportation (DOT), DOT Order 5610.1C, *Procedures for Considering Environmental Impacts,* and the Federal Aviation Administration (FAA), FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures.*

This Draft SEA is organized as follows:

Chapter 1 – Purpose and Need

This chapter includes a description of the general environmental regulations under which this SEA is to be prepared, the purpose of and need for the project, and a detailed description of the Proposed Action.

Chapter 2 – Alternatives

This Chapter is a review of the possible alternatives evaluated as part of the SEA analysis, including the Proposed Action and the No Action Alternatives. It describes the criteria used to evaluate the alternatives and summarizes the alternatives carried forward for detailed environmental impact assessment.

Chapter 3 – Affected Environment

This chapter's primary function is to describe pre-project conditions, not action-induced impacts. The chapter provides a baseline description of the existing environment's biological, economic, physical, and social conditions. This enables the reader to clearly understand the environmental characteristics that would be affected by the Proposed Action and the No Action Alternative.

Chapter 4 – Environmental Consequences

This chapter evaluates the potential for environmental impacts associated with the Proposed Action, the No Action Alternative, and any other considered alternatives on a number of specific resource categories.

Chapter 5 – List of Preparers

This chapter contains a list of those who contributed to the preparation of the SEA.

Technical Appendices

The appendices of this SEA contain information regarding the technical analyses used in the development of the document, as well as documentation of the public and agency coordination process and other supporting information. They include:

- Glossary of Terms (**Appendix A**)
- Supporting Information for Noise Analysis (**Appendix B**)
- Supporting Data for Analysis of Affected Environment (**Appendix C**)
- Agency Coordination and Public Involvement (**Appendix D**)
- Document Distribution List (**Appendix E**)

1.2 PURPOSE OF THIS SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

The Purpose of this Supplemental Environmental Assessment (SEA) is to assess the potential environmental impacts of a proposed modification to the Four Corner-Post Plan that was implemented at McCarran International Airport (LAS), Las Vegas, Nevada, in October 2001. The Four Corner-Post Plan was developed and implemented at LAS in 2001 as a direct result of the past and projected growth of air traffic at LAS. In furtherance of the Purpose and Need of the 2001 Four Corner-Post Plan Final Environmental Assessment, the Federal Aviation Administration (FAA) proposes to adjust the Four Corner-Post Plan by modifying the STAAV Area Navigation (RNAV) Standard Instrument Departure (SID) to accommodate eastbound departures from Runway 25.[1] Because this document is a supplement to the 2001 Final Environmental Assessment (FEA) for the Four Corner-Post Plan, the Purpose and Need outlined in the 2001 FEA has been carried forward to this Supplemental Environmental Assessment (SEA) document.

For a further understanding of the Purpose and Need presented in the 2001 Four Corner-Post Plan Final Environmental Assessment, the Purpose and Need discussion from that document is included below in the shaded section; please note that the shaded section was taken directly from the 2001 FEA.[2]

PURPOSE AND NEED

The following section identifies the airspace problems associated with the Los Angeles Air Route Traffic Control Center (ARTCC) and the Las Vegas Terminal Radar Approach Control (TRACON) (the *need* for the Proposed Action) and the proposed solution to the problem (the *purpose* of the Proposed Action). In addition, the proposed time frame for the implementation of the Proposed Action is described.

Need for the Proposed Action

The need for the Las Vegas Four Corner-Post Plan (Proposed Action) is a direct result of the increasing demand at LAS, resulting in higher levels of operation. As demand increases, existing procedures become less efficient and increase the chances of inducing significant airspace delays.

The City of Las Vegas is unique in that it is recognized as a world-class resort destination and the foremost gaming and entertainment center in the United States. It is also the site of many large conventions and trade shows that bring large numbers of business travelers to Las Vegas in concentrated time

[1] Standard Instrument Departure (SID) procedures were formerly referred to as Departure Procedures (DP) by the FAA. However, that nomenclature has changed since the issuance of the FONSI/ROD for the 2001 Four Corner-Post Plan at Las Vegas.

[2] *FONSI/ROD for the Las Vegas Four Corner-Post Plan, McCarran International Airport, Las Vegas, Nevada.* U.S. Department of Transportation, FAA, Western-Pacific Region. June 2001.

frames. This continued demand for hotel and convention services is the primary reason for the increase in demand at LAS.

McCarran International Airport is the 9th busiest airport in the United States and is served by 28 air carriers. Based on data contained in the *Northeast Extension of Concourse D*, prepared for Clark County, the following demand forecasts are provided:

> "Passenger activity at LAS has increased from approximately 8.6 million enplanements in 1989 to approximately 16.9 million in 1999 – a total increase of 96 percent. This increase represents an average annual growth rate of about 7 percent. This large increase year after year can be attributed primarily to the rapid expansion of the Las Vegas economy, resident population growth, the development of major new resort complexes, and airlines providing service to Las Vegas at attractive fares. Also, a strong correlation has existed and continues to exist between the number of available hotel/motel rooms in the Las Vegas area and the number of passengers enplaned at LAS. Passenger enplanements are expected to increase to approximately 37.9 million by 2020, representing an average annual growth rate of 3.9 percent. The capacity of LAS has been estimated at 27.5 million annual enplaned passengers. Aircraft operations at LAS are projected to increase from 542,922 in 1999 to 705,000 by 2011. If airfield capacity did not constrain operations at LAS it is anticipated that annual aircraft operations would reach 724,160 by 2011 and 868,080 by 2020."

Less than optimum airspace design and procedures have created an impediment for air traffic controllers to efficiently manage the existing and forecast high traffic demand. Airspace inefficiencies in the Las Vegas TRACON are created because the existing approach and departure procedures use the same flight path corridors to the northeast, northwest, southeast, and southwest. This results in departing aircraft not being able to climb unrestricted and arriving aircraft being restricted to higher altitudes.

Purpose of the Proposed Action

The purpose of the Las Vegas Four Corner-Post Plan (Proposed Action) is to address the air traffic/airspace inefficiencies resulting from increased demand at LAS. The, Proposed Action developed by the Los Angeles ARTCC and the Las Vegas TRACON includes a number of recommendations to improve the use of airspace, air traffic control procedures, reduce interaction with Nellis Air Traffic Control Facility, and reduce noise exposure to communities in the Las Vegas valley.

Existing coordination with Nellis Air Traffic Control Facility would be relieved because the majority of departing aircraft would be making left turns away from Nellis Air Traffic Control airspace. This left turn has the added benefit of reducing noise exposure over the city of Las Vegas. The proposed departure

corridors were specifically designed to be located over sparsely populated areas initially and then transition to areas of no population.

The existing structure of the Las Vegas TRACON is an East Corner-Post system and has been in place since 1998. The East Corner-Post system was created to solve an aircraft sequencing problem that was occurring within Los Angeles ARTCC. The East Corner-Post system has only been an interim step to solving the greater airspace inefficiencies within the Los Angeles ARTCC and the Las Vegas TRACON. Thorough review of the existing approach and departure procedures at Las Vegas TRACON (in today's high demand environment) has determined that the Las Vegas TRACON needs to develop a Four Corner-Post Plan.

The proposed Las Vegas Four Corner-Post Plan is also a direction-based system that organizes aircraft from similar directions over a specific geographic position (referred to as fix). The proposed Las Vegas Four Corner-Post Plan further organizes airspace so that aircraft arriving from similar directions are directed over a specific fix and aircraft departing to similar directions are directed over a different fix. This separates arrival traffic from departure traffic eliminating the need for altitude restrictions. The location of a fix is defined for pilots and controllers (in Classic procedures) by the location of a radio navigation aid or determined by reference to one or more radio navigation aids. Aircraft operating with advanced navigation equipment utilize RNAV procedures with fixes defined by earth-based coordinates (latitude and longitude).

As mentioned previously, National Airspace Redesign (NAR) is a growing initiative to allow for more efficient air traffic management. NAR has recognized the Four Corner-Post Plan as following its strategy of creating a more efficient airspace environment; one that will enable aircraft to enter enroute and TRACON airspace more efficiently. This recognition has given the Las Vegas Four Corner-Post Plan national support, and the funding needed to see the project through to implementation.

Finally, the Las Vegas Four Corner-Post Plan would allow aircraft to benefit from advanced navigation systems by developing Area Navigation (RNAV) procedures in addition to the classic procedures that utilize ground-based navigation aids. RNAV procedures do not rely upon such fixed facilities, but rely upon advanced on-board navigation computers capable of accurately identifying the aircraft's position and course along its route. RNAV equipment can compute aircraft position, actual track and ground speed, and information relative to a flight route selected by a pilot. RNAV procedures would alleviate operational complexity and increase controller flexibility. When fully implemented, RNAV would simplify operations for pilots and

controllers and provide more defined flight paths that are intended to decrease noise exposure to the communities.[3]

In conclusion, the purpose of this Supplemental Environmental Assessment (SEA) is to study only the potential environmental impacts associated with modifying the STAAV RNAV SID (the Proposed Action). See **Section 1.5** for detailed information regarding the Purpose and Need for this Proposed Action.

1.3 PROPOSED FEDERAL ACTION

The Federal Aviation Administration (FAA) proposes to adjust the Four Corner-Post Plan by modifying the STAAV RNAV SID to accommodate eastbound departures from Runway 25.

More specifically, the FAA actions required to implement the Proposed Action include:

- Refinement of the specific parameters and language defining the procedure.
- Flight testing of the procedure for conformance with safety standards.
- Modification of air traffic control orders and operational procedures by the Las Vegas TRACON.
- Training of controllers in the use of the procedure.
- Publication of the procedure in the FAA's U.S. Terminal Procedures publication.

1.3.1 Study Area for the Proposed Action

For the purpose of this Supplemental Environmental Assessment, the Study Area (or Area of Potential Effect) that encompasses the modification to the STAAV RNAV SID for Runway 25 departures begins at the western end of Runway 25 of McCarran International Airport and continues on a five mile radius through the west, northwest, and northeast quadrants encompassing airspace also currently used for aircraft operations from North Las Vegas Airport and Nellis Air Force Base. The Study Area encompasses airspace beginning at ground level and extending upward to 10,000 feet Above Ground Level (AGL). It extends to the outer limits of the Las Vegas Terminal Radar Approach Control (TRACON), a distance of approximately 40 Nautical Miles (NM). For the purposes of this document, the environmental analysis will only be conducted within the Study Area, beginning at ground level and extending up to 10,000 feet Above Ground Level (AGL). From that point (10,000 feet AGL), the remaining Study Area is shown as a dashed line to indicate the flight path for the Proposed Action (see **Exhibit 1.1, Study Area**). This dashed-line area will not be analyzed for potential environmental impacts. The STAAV RNAV departure from Runway 25 currently departs and continues to a point approximately four miles west of the airport, and then turns right. The Study Area has been extended to a five mile radius to account for any aircraft navigational equipment

[3] For clarification purposes, references to the City of Las Vegas include the entire Las Vegas Metropolitan area.

that might facilitate a slightly wider turn radius. See **Exhibit 1.1** for the Study Area associated with the Proposed Action.

1.4 THE LAS VEGAS FOUR CORNER-POST PLAN

In June 2001, the FAA released a Final Environmental Assessment (2001 FEA) to implement the Four Corner-Post Plan at McCarran International Airport (LAS), Las Vegas, Nevada. The Four Corner-Post Plan is a system designed with the Airport at the center and corner posts positioned in space around the Airport. The corner-post fixes at LAS are located approximately forty miles from the Airport, each serving a specific geographic quadrant of the airspace surrounding LAS, which is controlled by the Las Vegas Terminal Radar Approach Control facility (TRACON). Departing flights are routed over corner-posts through published Standard Instrument Departure (SID) procedures before diverging along multiple paths to their destination. Similarly, the corner-posts provide a means to merge arriving aircraft from several directions into a single flow of traffic in preparation for landing at LAS through the use of published Standard Terminal Arrival (STAR) procedures. The SIDs and STARs developed as part of the Four Corner-Post Plan apply only to aircraft departing from and arriving at LAS.

The established corner-posts in the northeast, southeast, southwest, and west quadrants of the airspace surrounding LAS (Four Corner-Post Plan) alleviated the potential for airspace conflicts by organizing the LAS airspace to allow for the orderly flow of departing and arriving aircraft over specific corner-posts. This means that arriving aircraft were allowed to descend more efficiently and departing aircraft to climb to en-route altitude more expeditiously. Specifically, use of the right-turn procedure for eastbound departures from Runway 25 was reduced with the implementation of the Four Corner-Post Plan in October 2001. Also, with the implementation of the Four Corner-Post Plan, the vertical limit of the Las Vegas TRACON airspace boundary was raised from 15,000 feet above Mean Sea Level (MSL) to 19,000 MSL (Flight Level 190)[4] to improve the transition between terminal and en-route airspace.

One important goal in developing and implementing the Four Corner-Post Plan at LAS was to establish SIDs and STARs that required use of advanced RNAV technology in order to guide departing and arriving aircraft over more precise ground tracks than was possible with the conventional arrival and departure procedures (referred to as classic procedures in the 2001 FEA) in place at LAS prior to implementation of the Four Corner-Post Plan. RNAV equipment is on-board many commercial aircraft today, but use of such technology at LAS was not possible before implementation of the Four Corner-Post Plan in 2001, due to the lack of developed RNAV procedures.

The use of such RNAV procedures is designed to reduce airspace complexity, reduce controller workload, and to simplify operations for pilots. The use of RNAV

[4] Altitudes above 18,000 feet MSL are referred to as Flight Levels (FL) in hundreds of feet. Below 18,000 feet MSL aircraft set their altimeter to a local pressure setting while above 18,000 feet MSL a standard altimeter setting is used by all aircraft.

procedures at LAS through the implementation of the Four Corner-Post Plan was also intended to provide noise relief to surrounding communities by reducing the dispersion of aircraft flight tracks through the use of the more precisely defined flight routes, which was not possible with the conventional departure and arrival procedures that were in place at LAS prior to implementation of the Four Corner-Post Plan.

1.4.1 Conventional Navigation and Area Navigation (RNAV)

Traditionally, Standard Instrument Departure (SID) procedures and Standard Terminal Arrival (STAR) procedures at an airport were based upon navigation via signals emitted by Very High Frequency Omni-directional Range (VOR) stations. A VOR is an earth-based radio Navigation Aid (NAVAID) that provides a means for pilots to navigate via reference to one VOR signal or to an airspace location (or "fix") derived from reference to two or more VOR signals or other radio NAVAIDs.

Today's modern aircraft are equipped with sophisticated on-board computer systems that allow pilots to navigate via RNAV procedures using a succession of waypoints, which are defined as coordinates (latitude and longitude) but do not require flying over ground-based VORs.

Therefore, RNAV waypoints and procedures are significantly more accurate than conventional VOR-based procedures. As an example, conventional procedures are greatly impacted by the accuracy of the associated Navigation Aid (NAVAID), the distance of the aircraft from the NAVAID, the accuracy of the aircraft's on-board instruments, the pilot's individual skills, and outside forces such as wind effects. RNAV equipment derives position information from satellites and/or ground-based Distance Measuring Equipment (DME), compensates for wind effect, and is considerably more accurate than conventional VOR-based procedures.

Such benefits of RNAV technology include the capability to improve airspace efficiency by producing more predictable aircraft ground tracks, thereby reducing an aircraft's noise footprint over any one ground area, as well as reducing pilot and controller workload. Because the majority of commercial air-carrier and corporate aircraft in operation today are RNAV-equipped, a primary goal of the LAS Four Corner-Post Plan was to capitalize on available technology by development of RNAV procedures. Additionally, the conventional departure and arrival procedures in place at LAS were also modified to accommodate non-RNAV equipped aircrafts. Approximately 95 percent of LAS traffic is RNAV-equipped and regularly use RNAV procedures.[5]

[5] Federal Aviation Administration, Las Vegas TRACON. April 14, 2004.

1.4.2 Airspace Inefficiencies Prior to Implementation of the Four Corner-Post Plan

The Four Corner-Post Plan was developed and implemented at LAS to improve airspace efficiency by alleviating the potential for airspace conflicts within Las Vegas TRACON airspace. Aircraft arriving at LAS follow one of several Standard Terminal Arrival (STAR) procedures developed for the Airport.

A STAR is a coded air traffic control route defined by a series of fixes (geographic points) that facilitates transition from the en-route airspace to the terminal (arrival) airspace. The STAR ends when it joins a Standard Instrument Approach Procedure (SIAP).[6] Similarly, departing aircraft follow a Standard Instrument Departure (SID) that defines a series of fixes to aid in transitioning from the departure phase to the en-route phase of flight. STAR and SID procedures are published for use by all pilots and depict the route to be flown graphically and textually. The use of STAR and SID procedures reduces controller and pilot workload and the potential for confusion by reducing communication and the need for confirming lengthy instructions.

Prior to the development of the Four Corner-Post Plan at LAS, all of the Airport's STARs and SIDs were conventional procedures, which utilize earth-based navigational aids. See **Section 1.4.1, Conventional Navigation and Area Navigation (RNAV),** of this SEA for detailed information about conventional navigational procedures. The inefficiencies in Las Vegas TRACON's airspace prior to implementation of the Four Corner-Post Plan existed because the approach and departure procedures at LAS used the same flight-path corridors to the northeast, west, southeast, and southwest, which increased the potential for airspace conflicts. Several factors contributed to the design and evolution of these procedures; among them include:

- The limitation of conventional earth-based navigational aids
- The predominant runway configurations in place at LAS prior to implementation of the Four Corner-Post Plan
- Informal noise abatement procedures at McCarran International Airport
- The adjacent Nellis Air Force Base (LSV)

In addition to the limitations of conventional earth-based navigational aids previously discussed in **Section 1.4.1**, only two such facilities are in place in the Las Vegas Valley; 1) the Las Vegas VORTAC, located at LAS, and 2) the Boulder City VORTAC located 2.9 nautical miles (NM) south of the Boulder City Municipal Airport.[7] A third conventional earth-based navigational aid is located at Nellis Air

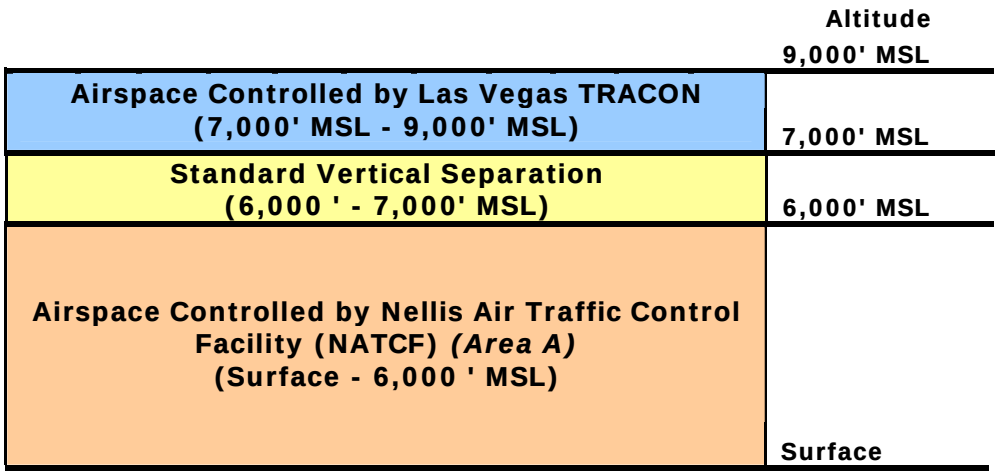
[6] A Standard Instrument Approach Procedure (SIAP) is a chart that provides instruction on how to navigate to the runway surface using a specific navigation aid or RNAV capabilities.

[7] A VORTAC is a Very-High Frequency Omnidirectional Range (VOR) Station with Tactical Air Navigation capabilities (i.e. VOR azimuth and Tactical Air Navigation distance measuring equipment at one site).

Force Base. However, only Nellis Air Force Base's Distance Measuring Equipment (DME) has been certified for use in the National Airspace System (NAS).

1.4.2.1 Proximity to Nellis Air Force Base

Nellis Air Force Base is located approximately eight nautical miles (NM) north of the LAS Airport. The Nellis Air Traffic Control Facility (NATCF) provides air traffic control (ATC) services for aircraft operating to and from Nellis and, at times, North Las Vegas Airport. The airspace delegated to NATCF is immediately adjacent to Las Vegas TRACON and both share a common airspace boundary. There is a portion of airspace delegated to NATCF identified as Area A, as depicted on **Exhibit 1.2**. This portion of airspace is vertically divided with NATCF responsible for the airspace from the surface to 6,000 feet MSL and Las Vegas TRACON responsible for 7,000 feet MSL through 9,000 feet MSL, as depicted in **Figure 1.1**. Area A is also shown on **Exhibits 1.2 through 1.7.**



Note: Mean Sea Level (MSL) is the average height of the surface of the sea for all stages of the tide and is used as a reference for elevations/altitudes.

FIGURE 1.1
DIVISION OF AIRSPACE RESPONSIBILITY IN THE VICINITY OF MCCARRAN INTERNATIONAL AIRPORT AND NELLIS AIR FORCE BASE

In order to ensure proper separation of aircraft controlled by NATCF, and those controlled by Las Vegas TRACON, each control facility is required to ensure aircraft under their control remains at least 1.5 NM from the common airspace sector boundary. **Figure 1.2** depicts aircraft separation between sector boundaries. When this cannot be accomplished, controllers at each facility must directly communicate to ensure coordination, adding to controller workload.

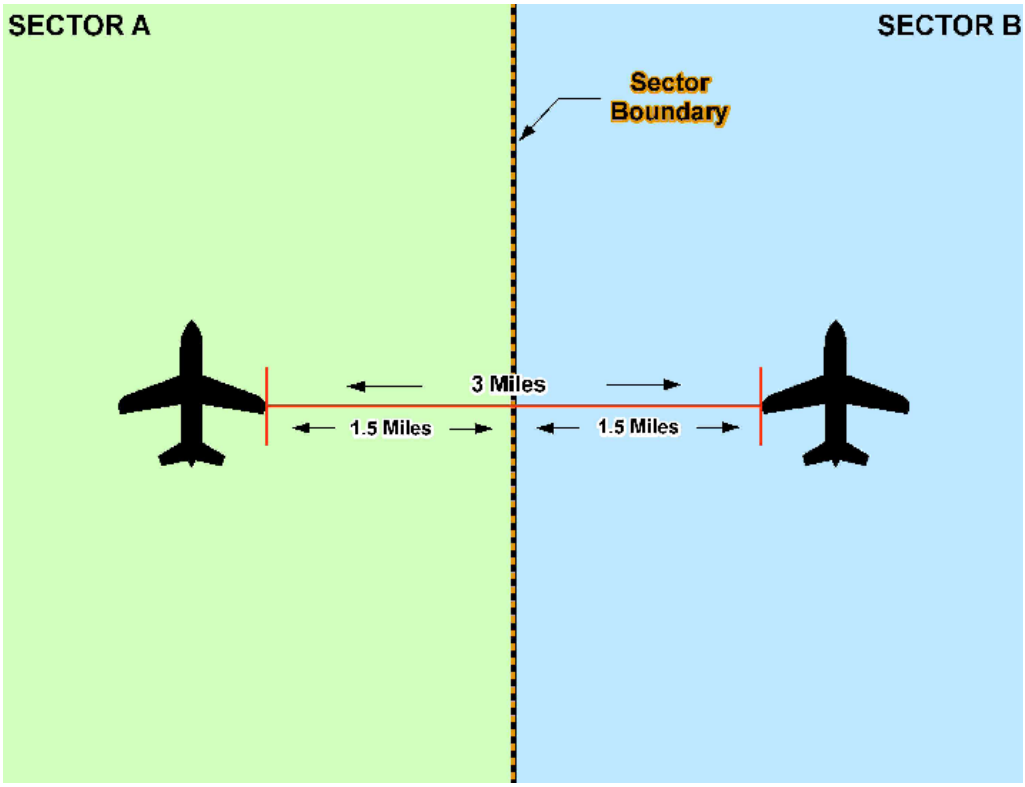


FIGURE 1.2
EXAMPLE OF AIRCRAFT SEPARATION BETWEEN SECTOR BOUNDARIES

1.4.2.2 Noise Abatement Procedures and Preferential Runway Use System at McCarran International Airport

The informal noise abatement procedures and preferential runway-use program in place at LAS were established prior to implementation of the Four Corner-Post Plan in an effort to minimize aircraft noise impacts on surrounding communities. However, such programs do not relieve the pilot of final authority for the safety of the flight or compliance with FAA air traffic control instructions. Therefore, unless the safety of a flight would be compromised, FAA air traffic control procedures typically adhere to the Airport's recommended noise abatement procedures and runway use preferences.

Elements of the informal noise abatement procedures and preferential runway use program at LAS that affect Runway 25 departures are listed below.[8]

- Runway 25R is the preferred runway for air carrier aircraft departures;
- Runway 25L/R turbojet departures are to fly runway heading until reaching a distance of three nautical miles from the LAS VORTAC before executing a left turn to depart the LAS area;
- Runway 25L/R turbojet departures are to fly runway heading until reaching 4 nautical miles from the LAS VORTAC or an altitude of 4,000 feet MSL before executing a right turn to depart the LAS area.

Runway Usage at McCarran International Airport

The LAS Airport has two pairs of parallel runways, one oriented east-west (Runways 7L/R-25L/R), the other oriented north-south (Runways 1L/R-19L/R). The manner and extent to which each runway is used is determined by the prevailing wind, existing weather conditions, and the Airport's informal noise abatement procedures.

The predominant traffic flow for aircraft operations is to the west and south. As shown in **Table 1.1**, during Visual Meteorological (VMC)[9] conditions, west and south traffic flow since October 2004 occurs approximately 80 percent of the time; during Instrument Meteorological Conditions (IMC)[10] conditions, approximately 30 percent of the time.[11] In October 2004, a second Instrument Landing System (ILS) was added at LAS to support Runway 1L. Prior to the installation of that second ILS, west and south flow during VMC occurred approximately 80 percent of the time and approximately 82 percent of the time during IMC. At LAS, IMC occurs less than two percent of the time, compared to an average of approximately 10 percent for most U.S. airports.[12] **Table 1.2** depicts the average daily runway use by category of operation.

[8] *FAR Part 150 Update, McCarran International Airport*, Brown Buntin Associates, Inc, January, 1994.
[9] Visual Meteorological Conditions exist when cloud ceiling heights are at or above 1,000 feet Above Ground Level (AGL) and visibility is equal to or greater than 3 Statute Miles (SM).
[10] Instrument Meteorological Conditions exist when cloud ceiling heights are less than 1,000 feet AGL and visibility is less than three Statute Miles (SM).
[11] *Runway Capacity and Aircraft Delay Analysis,* Ricondo and Associates, Inc, July, 2000.
[12] *Runway Capacity and Aircraft Delay Analysis*, Ricondo and Associates, Inc, July, 2000.

Table 1.1
RUNWAY USAGE
South and West Flows

Time Period	Visual Meteorological Conditions (VMC)	Instrument Meteorological Conditions (IMC)
Prior to October 2004	80%	82%
October 2004 to Present	80%	30%

Notes:

- Second Instrument Landing system (ILS) added to runway 01L in 10/2004.
- During IMC, Airport will generally move to a west and north flow to favor the use of both ILS approaches, except when wind or weather preclude use.

Source: Federal Aviation Administration Control Tower, Las Vegas, Nevada. July 2005

Table 1.2
RUNWAY USE PERCENTAGES AT MCCARRAN INTERNATIONAL AIRPORT 2003

Runway	Air Carrier Operations				Commuter/General Aviation Operations			
	Arrivals		Departures		Arrivals		Departures	
	% Day	% Night	% Day	% Night	% Day	% Night	% Day	% Night
01L	2.4%	0.8%	1.6%	0.3%	7.8%	3.6%	5.8%	2.3%
01R	7.2%	2.9%	3.8%	2.9%	4.5%	3.6%	2.2%	1.8%
19L	5.6%	13.0%	22.1%	1.7%	8.8%	10.0%	35.7%	29.8%
19R	3.9%	4.1%	0.7%	0.2%	61.9%	58.7%	38.2%	43.8%
07L	0.0%	0.4%	7.0%	2.3%	0.2%	2.1%	5.2%	2.2%
07R	0.2%	0.4%	0.1%	0.0%	0.4%	1.0%	0.4%	0.3%
25L	78.9%	68.5%	0.4%	1.7%	16.0%	11.0%	0.4%	1.3%
25R	1.8%	9.9%	64.3%	90.9%	0.4%	9.9%	12.1%	18.5%

Note:

- Day is defined by the Integrated Noise Model (INM) as 7:00 AM to 9:59 PM local time.
- Night is defined by the Integrated Noise Model (INM) as 10:00 PM to 6:59 AM local time.

Source: Clark County Department of Aviation. June 2005, *Terminal 3, Environmental Assessment Administrative Draft Report.*

1.4.3 Airspace Conflicts Prior to Implementation of the Four Corner-Post Plan

The purpose of the Four Corner-Post Plan was to enhance airspace and air traffic control efficiency by eliminating airspace conflicts and reduce controller workload. It was intended to increase safety, efficiency and lead to a reduction in aircraft delay. The goal was to be met by realigning the STAR and SID procedures. It was intended to take full advantage of technology developments. The procedures in use prior to the Four Corner-Post Plan created airspace conflicts because they required arrivals and departures to use the same flight path corridors. The result was that departing aircraft were unable to climb unrestricted to cruising altitude and arriving aircraft were unable to descend in a timely manner.

This operation required rigorous attention by the air traffic controllers to monitor altitudes, ensure safe separation was maintained and ensure aircraft remained within delegated airspace. It also imposed operational penalties on aircraft operators. Aircraft unable to climb used more fuel at the lower altitudes and caused a greater noise impact on the community. Additionally, descending aircraft were precluded from applying power-off, fuel-efficient descent techniques.

1.4.4 Runway 25 Departure Procedures in Place Prior to Implementation of Four Corner-Post Plan

Prior to the implementation of the Four Corner-Post Plan at LAS in 2001, aircraft departing Runway 25 for eastern destinations maintained runway heading until reaching a point three miles west of the Airport for aircraft turning left and four miles west of the Airport for aircraft turning right, as measured from the LAS VORTAC (a conventional navigational aid) before starting their turn to the east to depart LAS airspace. This was the requirement of both the MEAD and OVETO conventional SIDs and had been in use for many years. **Exhibit 1.2** shows these Runway 25 departure procedures which were in place prior to implementation of the Four Corner-Post Plan.

The MEAD and OVETO SIDs were restricted to a narrow corridor, approximately 4.8 NM wide, between Las Vegas TRACON airspace and that airspace controlled by the Nellis Air Force Base Air Traffic Control Facility (NATCF). LAS TRACON air traffic controllers had to ensure that departing aircraft did not violate airspace delegated to NATCF, which required additional controller coordination.

1.4.5 Implementation of the Four Corner-Post Plan - Runway 25 Departure Procedures, October 2001

Implementation of the Four Corner-Post Plan at LAS in October 2001 alleviated the potential for airspace conflicts by redesigning arrival and departure routes to take advantage of technology advances by establishing RNAV arrival and departure procedures while retaining conventional routes for those aircraft that were not RNAV-equipped.

With the implementation of the Four Corner-Post Plan, use of the OVETO SID was reduced in favor of the newly designed RNAV SIDs. The RNAV SIDs established a waypoint west of the Airport where all affected aircraft would initially turn left. (This waypoint replaced the previous three Nautical Mile DME fix which was measured from the Las Vegas VOR.) The Four Corner-Post Plan did not eliminate the three nautical-mile restriction for departures from Runway 25 utilizing conventional departure procedures. The intent was that aircraft using the conventional procedure would be vectored to emulate the new RNAV departure route. However, it was also the intent that at least five percent of the RNAV traffic would use the right turn departure procedure. The implementation of the Four Corner-Post Plan RNAV procedures also reduced the coordination required between Las Vegas TRACON and Nellis Air Force Base controllers.

It is important to note that the OVETO (conventional) SID was never cancelled as a result of implementation of the Four Corner-Post Plan in October 2001. Instead, a Notice to Airmen (NOTAM) was issued stating that the OVETO SID was "not available." It is also important to note that the STAAV 1 RNAV SID was created to mimic the OVETO SID and that eastbound traffic would also be radar vectored to mimic the OVETO SID route. **Exhibit 1.3** shows the Runway 25 departure procedures implemented as part of the Four Corner-Post Plan at LAS. For a more thorough description of the Four Corner-Post Plan, refer to the FONSI/ROD for the Final Four Corner-Post Environmental Assessment, issued by the FAA on June 26, 2001.[13]

1.4.6 Interim Changes made to Runway 25 Procedures after Implementation

Implementation of the Four Corner-Post Plan at LAS accomplished the purpose and need of the project, which allowed air traffic to be managed more efficiently, resulting in benefits for the users and managers of the National Airspace System (NAS). However, after implementation, several deficiencies were experienced. The original RNAV SIDs employed fly-by waypoints designed to emulate the three nautical mile fix. After implementation, however, it was found that aircraft were turning too far west of the intended route. This did not produce the intended operational benefits. Additionally, it created a wider dispersion impact and ground tracks varied significantly. Consequently, the FAA suspended the RNAV departure procedures for a 30-day period starting October 4, 2002, and vectored all departures. A summary matrix of all interim changes made since the implementation of the Four-Corner Post Plan in October 2001 is presented in **Table 1.3**.

[13] *FONSI/ROD for the Las Vegas Four Corner-Post Plan, McCarran International Airport, Las Vegas, Nevada.* U.S. Department of Transportation, FAA, Western-Pacific Region. June 2001.

1.4.6.1 First Interim Change Made in January 2003

In January 2003, the FAA issued the first revised RNAV departure procedures attempting to reconcile the initial turning point for aircraft departing LAS. As shown in **Exhibit 1.4**, the new procedures required aircraft to fly-over a waypoint, either LODZY or EYENE, located 2.5 miles west of the Airport. The fly-by waypoint designated ANDYY, located six miles west of the Airport, was eliminated. Aircraft were then routed from LODZY or EYENE south to the IDALE waypoint.

The amended RNAV SID procedures were published as the AACES TWO, the WYLLD TWO, the IDALE TWO, the MINEY TWO and the STAAV TWO procedures. While these changes simplified the procedures and began producing operational efficiencies, it was determined that the left-turn departing LAS was now occurring too early, adversely impacting a community southwest of the Airport. See **Table 1.3** for more information.

1.4.6.2 Second Interim Change Made in November 2003

The FAA continued to review the procedures to address both the concerns of the communities surrounding LAS and of the Clark County Department of Aviation (CCDOA). The FAA and CCDOA agreed to identify a departure gate southwest of the Airport through which all aircraft would be routed, as a potential solution to the problems encountered with the left turn for aircraft departing LAS. In November 2003, the FAA published a second revised RNAV procedure for departures from Runway 25 at LAS. As shown in **Exhibit 1.5**, these revised departure procedures defined fly-by waypoints at new locations as the initial waypoints.

The new waypoints, designated as RBELL and PIRMD, direct aircraft six miles west of the airport, resulting in the aircraft making a steeper southerly turn before heading to the next fly-by waypoint, designated as ROPPR. The revised RNAV SID procedures were renamed to allow the FAA to revert to the previous edition should problems be encountered. The TRALER ONE replaced the AACES TWO, and the COWBY ONE replaced the WYLDD TWO procedures. The IDALE TWO procedure was replaced by the BOACH ONE and SHEAD ONE procedures, which modified the IDALE TWO for aircraft southbound and westbound departures respectively. Although these latest changes accomplished the FAA's desired operational efficiencies, aircraft noise continued to impact areas of the unincorporated community of Enterprise, Nevada, located southwest of the Airport. See **Table 1.3** for more information.

1.4.6.3 Third Interim Change Made in March 2005

The third and latest interim change to the Runway 25 procedures at LAS was implemented on March 17, 2005. The changes were made to more accurately contain the departure tracks within the Cooperative Management Area (CMA) and ensure aircraft would exit the CMA through the egress gate required by CCDOA.

The most recent changes involved slight modifications of the latitude and longitude of the RBELL, PIRMD, ROPPR, CESAR, BOACH, MDDGG waypoints. Review of flight tracks by the CCDOA indicates the changes have accomplished the desired effect of containing approximately 98 percent of the flight tracks within the CMA preferred by CCDOA.[14] The FAA continues to work with CCDOA to refine the Runway 25 departure procedure at LAS. **Exhibit 1.6** presents the current Runway 25 departure procedures in place at LAS and the expanded view of flight tracks over Enterprise (see also **Exhibit 4.8** in **Chapter Four, Environmental Consequences,** for a close-in view of the current Runway 25 departure procedures in place at LAS in relation to major roadways). See **Table 1.3** for more information.

[14] Clark County Department of Aviation. May 2005.

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Table 1.3
SUMMARY MATRIX OF INTERIM PROCEDURE CHANGES SINCE IMPLEMENTATION OF FOUR CORNER-POST PLAN IN OCTOBER 2001

Interim Change Number	Date Implemented	Original Procedure Name	New Procedure Name	Modification
N/A	October 16, 2001	AACES ONE RNAV WYLLD ONE RNAV IDALE ONE RNAV	N/A	Initial implementation of the Four Corner Post Plan. Established waypoints west of the airport for initial departure routing. Runway 25R departures were routed over the LODZY waypoint, 3 NM west of the airport while Runway 25R departures were routed over EYENE waypoint, 2 NM west of the airport. Aircraft assigned AACES ONE, IDALE ONE and WYLLD ONE were routed over ANDDY waypoint, located 6 NM west of the airport before turning south to the IDALE waypoint. The LODZY, EYENE and ANDDY waypoints were designated fly-by waypoints.
		STAAV ONE RNAV	N/A	The STAAV ONE procedure routed Runway 25 departures to LODZY and EYENE waypoints, however the waypoints were designated as fly-over waypoints. After passing the appropriate waypoint aircraft turned right northbound to the STAAV waypoint.
		MINEY ONE RNAV	N/A	The MINEY ONE procedure was applicable only to runway 7 departures.
1	January 23, 2003	AACES ONE RNAV WYLLD ONE RNAV IDALE ONE RNAV STAAV ONE RNAV MINEY ONE RNAV	AACES TWO RNAV WYLLD TWO RNAV IDALE TWO RNAV STAAV TWO RNAV MINEY TWO RNAV	This change modified the location of the EYENE waypoint to 2.5 NM west of the airport. It modified the designation of the LODZY and EYENE waypoints from fly-by to fly-over and eliminated the ANDDY waypoint. Departures from Runway 25R would now fly over LODZY, departures from Runway 25L would fly over EYENE. After crossing the appropriate waypoint the aircraft turned directly to the IDALE waypoint located southwest of the airport, while STAAV departures turned right.

Table 1.3, Continued
SUMMARY MATRIX OF INTERIM PROCEDURE CHANGES SINCE IMPLEMENTATION OF FOUR CORNER-POST PLAN IN OCTOBER 2001

Interim Change Number	Date Implemented	Original Procedure Name	New Procedure Name	Modification
2	November 12, 2003	AACES TWO RNAV WYLLD TWO RNAV IDALE TWO RNAV	TRALER ONE RNAV COWBY ONE RNAV BOACH ONE RNAV	This change modified the location of the initial RNAV waypoints for Runway 25 departures. The LODZY (Runway 25R) waypoint was relocated 6 NM west of the airport and renamed RBELL. The EYENE (Runway 25L) waypoint was relocated 6 NM west of the airport and renamed PIRMD. The waypoint designation was changed from fly-over to fly-by for both waypoints. The IDALE waypoint was relocated to the east and renamed ROPPR. The new procedures specified a course to fly between RBELL or PIRMD to ROPPR.A crossing altitude of below 7,000 feet MSL was established at ROPPR. The IDALE TWO RNAV SID was replaced by BOACH ONE RNAV SID for southbound flights and SHEAD ONE RNAV SID for west-bound flights. The MINEY TWO RNAV SID was cancelled. The PRFUM ONE RNAV SID was developed for aircraft departing runways 25/19 destined to the Phoenix area.
			SHEAD ONE RNAV PRFUM ONE RNAV	
		MINEY TWO RNAV	CANCELLED	
		SHEAD ONE RNAV	SHEAD TWO RNAV	Los Angeles ARTCC made a change to this procedure that did not impact the procedure in terminal airspace. It is identified here only to maintain procedure sequential numbering.
3	March 17, 2005	TRALER ONE RNAV COWBY ONE RNAV BOACH ONE RNAV SHEAD TWO RNAV PRFUM ONE RNAV	TRALER TWO RNAV COWBY TWO RNAV BOACH TWO RNAV SHEAD THREE RNAV PRFUM TWO RNAV	The latest change relocated the RBELL (Runway 25R) and PIRMD (Runway 25L) waypoints to 6.2 NM west of the airport for all but the STAAV RNAV SID. It specifies a specific course to fly from RBELL/PRIMD WAYPOINTS TO ROPPR waypoint and eliminated the JEBBB waypoint for Runway 25 departures. The new course to ROPPR is farther east than the previous course to conform to the CMA.

1.5 PURPOSE AND NEED

The following section identifies the Purpose and Need of the Proposed Action.

1.5.1 Need for the Proposed Action

Las Vegas is uniquely recognized as a world-class resort destination and the foremost gaming and entertainment center in the United States. It is the site of many large conventions and trade shows that attract large numbers of business and leisure travelers in concentrated time frames.

Prior to implementation of the Four Corner-Post Plan in 2001, LAS passenger traffic had increased by an average of 5.7 percent per year between 1989 and 1999.[15] The large increase year after year was attributed primarily to the rapid expansion of the Las Vegas economy, residential population growth, the development of major new resort complexes, and operators providing service to Las Vegas at attractive fares. A strong correlation exists between the number of available hotel/motel rooms in the Las Vegas area and the number of enplaned passengers at LAS.[16]

As a direct result of these increased enplaned passengers, higher levels of operations were recorded. This further supported the need to implement operational changes at the airport. The historic passenger counts and forecast passenger levels at LAS are presented in **Table 1.4**.

Based upon the existing airport configuration (runway and taxiway complex) and the operating procedures at LAS, CCDOA estimates the sustainable capacity of LAS at 625,000 annual aircraft operations, the level beyond which, aircraft delays would become untenable. The sustainable capacity figure was derived from a study conducted by CH^{2}Mhill entitled *Analysis of the Aviation Activity Forecasts for Ivanpah Valley Airport*, dated December 2001. The sustainable capacity figure was revalidated in the *Environmental Assessment for the Construction of Terminal 3*, conducted by Ricondo and Associates in March 2003. The events of September 11, 2001, and subsequent changes to the aviation industry required CCDOA to revalidate the traffic forecasts for LAS.

[15] *FONSI/ROD for the Las Vegas Four Corner-Post Plan, McCarran International Airport, Las Vegas, Nevada.* U.S. Department of Transportation, FAA, Western-Pacific Region. June 2001.

[16] *Draft Environmental Assessment for the Construction of Terminal 3 at McCarran International Airport*, Ricondo and Associates, March, 2003. Pg III-11.

Table 1.4
HISTORIC AND FORECAST PASSENGER LEVELS AT LAS

Historic Passenger Counts		Forecast Passenger Levels	
Year	**Number of Passengers**	**Year**	**Number of Passengers**
1989	17,109,000	2005	42,130,000
1990	19,084,000	2006	43,270,000
1991	20,172,000	2007	44,440,000
1992	20,913,000	2008	45,640,000
1993	22,492,000	2009	46,880,000
1994	26,850,000	2010	48,140,000
1995	28,027,000	2011	49,510,000
1996	30,460,000	2012	50,780,000
1997	30,306,000	2013	52,160,000
1998	30,227,000	2014	53,570,000
1999	33,669,000	2015	55,020,000
2000	36,866,000	2016	56,510,000
2001	35,181,000	2017	58,040,000
2002	35,009,000	2018	59,610,000
2003	36,265,000	2019	61,220,000
2004	41,442,000	2020	62,870,000
		2021	64,580,000
		2022	66,320,000
		2023	68,120,000
		2024	69,960,000
		2025	71,850,000
Percent Change 1989 - 2004	**142%**	**Percent Change 2005 - 2025**	**71%**
Percent Change 1989 - 2025		***320%***	
Historic Average Annual Growth Rate		***5.7%***	
Forecast Average Annual Growth Rate		***2.7%***	

Source: *History and Future of Operations at McCarran*, presented by Clark County Department of Aviation at FAR Part 150 Update Public Working Group. September 27, 2005.

A third study entitled *Aviation Activity Forecast Report for Ivanpah Valley Airport* was prepared by URS Corporation in November 2003 and updated in June 2005. This study found that aviation activity at LAS has recovered from the events of September 11, 2001, faster than other US airports. It forecast annual operations to increase at a rate of 2.26 percent throughout the Las Vegas region over the next 20 years, and that the growth rate at LAS would be slightly higher, at approximately 2.41 percent per year. This Study validated the sustainable annual capacity at 625,000 annual aircraft operations based upon an average delay exceeding 6 minutes per aircraft operation, assuming that 78 percent of aircraft operations are conducted by scheduled air carriers and commuter operators.[17] The study also validated CCDOA's determination that a supplementary commercial services airport in southern Nevada would be required to serve CCDOA needs sometime before the year 2020. The URS study indicates LAS capacity would be exceeded in approximately 2015. In contrast, the 2001 Four Corner-Post Plan Final Environmental Assessment presented total annual operations of 622,000 by the year 2005. Refer to **Table 1.5** for the aviation activity forecast at LAS.

Table 1.5
FORECAST OF TOTAL AIRCRAFT OPERATIONS AT LAS

Year	Type of Operation						TOTAL
	Air Carrier	Commuter	Cargo	Air Tour	General Aviation	Military	
2004	357,388	16,800	6,436	89,393	70,000	2,200	**542,217**
2005	363,185	16,495	6,760	93,018	71,730	2,000	**553,188**
2006	371,852	20,105	7,280	96,836	71,283	2,000	**569,356**
2007	380,634	23,691	7,280	100,618	70,886	2,000	**585,109**
2008	390,360	25,016	7,280	104,618	70,536	2,000	**599,810**
2009	400,635	25,836	7,800	108,800	70,230	2,000	**615,301**
2010	408,776	25,748	8,320	113,200	69,964	2,000	**628,008**
2011	419,626	26,445	8,320	117,818	69,738	2,000	**643,947**
2012	431,076	26,594	9.360	122,400	69,548	2,000	**660,978**
2013	442,657	27,249	9,360	127,200	69,393	2,000	**677,859**
2014	454,352	28,810	9,880	132,436	69,272	2,000	**696,750**
2015	457,611	30,193	9,880	137,818	69,182	2,000	**706,684**
2020	518,654	37,524	11,440	167,797	69,162	2,000	**806,577**
2025	588,526	44,727	13,000	204,297	69,766	2,000	**922,316**
AACGR (2004-2030	**2.4%**	**4.8%**	**3.4%**	**4.0%**	**0.0%**	**-0.5%**	**2.6%**

Note: AACGR stands for Average Annual Compound Growth Rate.

Source: *Forecast of Commercial Service Airport Activity in the Las Vegas Metropolitan Area*, prepared by URS. June 2005.

[17] *Final Aviation Activity Forecast Report for Ivanpah Valley Airport*, URS Corporation, June 2005.

During the design and implementation of the Four Corner-Post Plan, CCDOA expressed reservations that elimination of the right-turn departure procedure from Runway 25 for eastbound traffic would have a potentially negative effect on the sustainable capacity of LAS Airport. CCDOA reserved judgment on the implementation of the RNAV procedures, as an air traffic efficiency enhancement, because the initial operational impacts from the procedures were unknown.

An unanticipated impact of the implementation of the Four Corner-Post Plan has been the inducement of departure delays negating the intended airspace efficiencies. The requirement for all Runway 25 and Runway 19 departures to fly over a single waypoint (ROPPR) southwest of LAS has required ATC to provide additional spacing for a Runway 19 departure when preceded by a Runway 25 departure. This circumstance has been exacerbated by the continual increase in traffic demand. Operators serving destinations east of Las Vegas have operated at reduced efficiency, partly stemming from increased cost burdens attributable to higher fuel costs and the longer left-turn lengths that are now required by the Four Corner Post Plan. Increasing operator efficiency by permitting an RNAV right-turn SID from runway 25 for eastbound would result in overall airspace efficiency.

It is important to note that the implementation of the Four Corner-Post Plan in October 2001 never cancelled the OVETO (conventional) SID. Instead, a NOTAM was issued stating that the OVETO SID was "not available." It is also important to note that the STAAV 1 RNAV SID was created to mimic the OVETO SID and that eastbound traffic would also be radar vectored to mimic the OVETO SID route.

The final need for the Proposed Action is to identify the airspace problem associated with a reduction in the use of the right-turn procedure from Runway 25 for eastbound traffic as part of the implementation of the Four Corner-Post Plan at LAS (the need for the Proposed Action). The proposed solution to the problem is the modification of the STAAV RNAV SID for Runway 25 departures to enhance eastbound traffic at LAS (the purpose of the Proposed Action).

LAS is now the 6th busiest Airport in the United States presently serving thirty-five scheduled air carriers and five to seven charter operators, depending on the season.[18] According to the *Environmental Assessment for the Construction of Terminal 3*, passenger activity at LAS increased from 9.6 million enplanements in 1990 to approximately 18.4 million enplanements in 2000.[19] Passenger activity has since increased to 41.4 million in 2004.[20] The growth is expected to increase to 63 million passengers by 2020.[21] However, airspace design and procedural deficiencies have created hindrance for air traffic controllers' abilities to efficiently manage the existing and forecasted high traffic demand.

The FAA recognizes the Las Vegas Four Corner-Post Plan as being the foremost

[18] Clark County Department of Aviation. June 2005.
[19] *Environmental Assessment for the Construction of Terminal 3*, prepared by Ricondo and Associates. March 2003.
[20] *Las Vegas Metro Area Forecast, Annual Passengers.* April 21, 2005.
[21] Clark County Department of Aviation. July 2005.

strategy for improving airspace efficiency in the southwestern and western regions of the United States. The implementation of this Plan in 2001 allowed air traffic to be managed more efficiently, resulting in benefits for the users and managers of the National Airspace System (NAS). The proposed modification to the Las Vegas Four Corner-Post Plan would continue to benefit all parties involved through the continued use of precise Area Navigation (RNAV) departure procedures.

In order to accomplish the Proposed Action, the FAA must develop an RNAV procedure that routes eastbound aircraft north of LAS while remaining clear of airspace delegated to Nellis AFB, which would be accomplished by modifying the STAAV RNAV SID for eastbound departures from Runway 25. The following list of items delineates the key requirements:

- Modify STAAV RNAV SID procedure for a right-turn from Runway 25 for eastbound departures from LAS;
- Ensure the developed procedures meet all FAA and air carrier criteria for flight operations standards;
- Obtain any appropriate waivers, if standard criteria cannot be met;
- Provide appropriate briefings to airport and interested community representatives;
- Publish appropriate controller training materials required for airspace and procedural changes;
- Accomplish the necessary coordination for the publication of the modified STAAV RNAV SID for use by all eligible segments of the aviation community;
- Mimic the route of the OVETO SID (see **Exhibit 1.2**), which was in place prior to implementation of the Four Corner-Post Plan.

This Proposed modification to the STAAV RNAV SID would provide the ability to navigate an aircraft by use of sophisticated on-board flight management computers, providing for precise navigation of aircraft along pre-determined tracks over the ground, without reliance on conventional ground-based navigational aids. Therefore, the Proposed Action would improve efficiency in the use of the LAS airspace and produce a reduction of potential future delays. A consequence of the Proposed Action would be a reduction in noise exposure patterns for communities south and southwest of the Airport (see **Section 4.2, Noise**, of this document for more detailed information). Aircraft operators would also see a cost savings for eastbound flights as a result of the Proposed Action.

During west traffic flow at LAS (i.e. wind and weather conditions dictate that Runway 25 is the preferred departure runway), approximately thirty-three percent of all Runway 25 departures are bound for destinations east of Las Vegas and would therefore, be eligible for the modified STAAV RNAV SID.[22] **Table 1.6** presents the total number of Runway 25 departures during successive days in April 2005, as well as the number of departures that would be eligible for the Proposed Action.

[22] LAS TRACON. May 24. 2005.

Table 1.6
RUNWAY 25 DEPARTURES

Date	Total Number of Runway 25 Departures	Runway 25 Departures that are Assigned a Right Turn After Departure (STAAV)	Number of Runway 25 Departures Eligible for Proposed Right Turn Departure	Percentage of STAAV RNAV SID Departures Proposed for the Right Turn
April 13, 2005	485	25	156	32%
April 14, 2005	488	20	161	33%
April 15, 2005	504	32	168	33%
April 16, 2005	478	21	161	34%
TOTAL	**1,955**	**98**	**646**	**33%**

Source: LAS TRACON. May 24, 2005.

1.5.1.1 Summary of Needs for the Proposed Action

The following is a summary of the Needs for the Proposed Action:

- The implementation of operational changes at LAS is needed as a direct result of increases in total passengers and operation levels.
- Aviation activity at LAS has recovered from the events of September 11, 2001 faster than at other US airports. Annual operations are to increase at a rate of approximately 2.41 percent per year.
- The sustainable annual capacity of LAS is 625,000 annual aircraft operations, based upon an average delay exceeding 6 minutes per aircraft operation, assuming that 78 percent of aircraft operations are conducted by scheduled air carriers and commuter operators. The 2001 Four Corner-Post Plan Final Environmental Assessment presented annual operations of 622,000 by the year 2005 at LAS.
- An unanticipated impact of the implementation of the Four Corner-Post Plan has been the inducement of departure delays negating the intended airspace efficiencies. The requirement for all Runway 25 and Runway 19 departures to fly over a single waypoint (ROPPR) southwest of LAS has required ATC to provide additional spacing for a Runway 19 departure when preceded by a Runway 25 departure. This circumstance has been exacerbated by the continual increase in traffic demand. Operators serving destinations east of Las Vegas have operated at reduced efficiency, partly stemming from increased cost burdens attributable to higher fuel costs and the longer left-turn lengths that are now required by the Four Corner Post Plan. Increasing operator efficiency by permitting an RNAV right-turn SID from runway 25 for eastbound would result in overall airspace efficiency.
- The final need for the Proposed Action is to recapture the effectiveness that was lost from the reduction in the use of the right-turn procedure from Runway 25 for eastbound traffic as part of the implementation of the Four

Corner-Post Plan at LAS (the need for the Proposed Action). The proposed solution to the problem is the modification of the STAAV RNAV SID for Runway 25 departures to enhance eastbound traffic at LAS (the purpose of the Proposed Action).

1.5.2 Purpose of the Proposed Action

The purpose of the Proposed Action is to improve efficiency in LAS airspace, ensure LAS can meet its forecast future demand, reduce its potential for future delays, provide operational benefits to the operators at LAS, and reduce the aircraft noise exposure patterns for communities south and southwest of the Airport, while maintaining a commensurate level of safety. Modifications to the STAAV RNAV SID for eastbound departures from Runway 25 at LAS would meet the needs discussed in **Sections 1.5.1 and 1.5.1.1** of this SEA.

As shown in **Exhibit 1.7**, the Proposed Action would route eastbound departures from Runway 25 north of LAS. The design and implementation of the Proposed Action would delineate mandatory minimum crossing altitudes at waypoints established to ensure separation from the Nellis Air Traffic Control Facility (NATCF) airspace and the STAR routes. This design would largely maintain the controller workload reduction achieved in the Four Corner-Post Plan. The Proposed Action RNAV SID would be designated STAAV 3 and would mimic the route of the OVETO SID (see **Exhibit 1.2**), which was in place prior to implementation of the Four Corner-Post Plan. (See also **Exhibit 4.10** in **Chapter Four, Environmental Consequences,** for a close-in view of the Proposed Action in relation to major roadways).

1.5.2.1 Summary of Purposes of the Proposed Action

The following is a summary of the Purposes of the Proposed Action:

- Improve efficiency in LAS airspace;
- Ensure LAS can meet its forecast future demand;
- Reduce the potential at LAS for future delays;
- Provide operational benefits to the operators at LAS;
- Modifications to the STAAV RNAV SID for eastbound departures from Runway 25 at LAS would accomplish the Purpose of the Proposed Action.

1.6 TIMEFRAME

If approved, it is anticipated that the proposed modification to the STAAV RNAV SID, which would be designated STAAV 3, would be implemented at Las Vegas McCarran International Airport by July 2006.

1.7 AGENCY AND PUBLIC COORDINATION

The Federal Aviation Administration (FAA) is committed to agency input and public involvement throughout the development process of a Supplemental Environmental Assessment (SEA). The FAA *Community Involvement Policy Statement,* dated April 17, 1995, clearly affirms that "The Federal Aviation Administration (FAA) is committed to complete, open, and effective participation in agency actions. The agency regards community involvement as an essential element in the development of programs and decisions that affect the public." [23]

Additionally, FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures* (Chapter 2, Paragraph 208b), states that "At the earliest appropriate stage of the action and early in the process of preparing NEPA documentation, the responsible FAA official, or when applicable, the project proponent, must provide pertinent information to the affected community and agencies and consider the affected communities' opinions." [24]

To meet and exceed this guidance, the FAA coordinated with several federal, state, and local agencies, as well as the general public, throughout the preparation of this Draft SEA, as described in **Appendix D, Agency Coordination and Public Involvement**.

[23] FAA Community Involvement Policy Statement, April 17, 1995.
[24] FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, June 8, 2004. 40 CFR 1501.2